Canadian Centre for Occupational Health and Safety

Centre canadien d'hygiène et de sécurité au travail

AIDS

A Summary of the Occupational Health Concern

2nd Edition

P89 - 21E

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September 1989

CCOHS/CCHST

90-03613/

AIDS--A SUMMARY OF THE OCCUPATIONAL HEALTH CONCERN

This publication was prepared as a source of information for health and safety committees and others with an interest in understanding and reducing the occupational risk of AIDS. It revises and updates the 1986 edition. It provides new information on the development, treatment and prevention of AIDS. It also provides information on the projection of the spread of AIDS in Canada over the next several years.

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Cette publication est offerte en francais sous le titre : SIDA -- Un resume des risques sur le plan professionnel.

CCOHS NUMBER P89-21E (previously P86-8E)
ISBN 0-660-13328-8 (previously 0-660-12109-3)
DSS CATALOGUE NUMBER CC273-2/89-21E (previously CC273-2/86-8E)

2nd Edition
Published 1989

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1. WHAT IS AIDS?

AIDS is a condition in which the infection control mechanism of the human body weakens to the point that the body becomes unusually prone to a variety of diseases. There is presently no cure.

The full name for AIDS--Acquired Immune Deficiency Syndrome--describes several of the characteristics of the disease.

Acquired indicates that it is not an inherited condition.

Immune Deficiency indicates that the body's immune system breaks down.

Syndrome indicates that the disease results in a variety of health problems.

AIDS is transmitted from an infected person by body fluids such as blood, semen or other blood-containing secretions. As a result, anyone who is occupationally exposed to these body fluids risks contracting the disease. Preventive measures such as the wearing of protective clothing, gowns, gloves, masks and goggles should be employed to control the spread of AIDS among workers who may be at risk.

2. HOW DOES AIDS AFFECT THE BODY?

The human immune system involves many types of cells which guard against the germs responsible for most diseases. The immune system's most important guard cells are B-cells and T-cells, which are special white blood cells. B-cells and T-cells cooperate to fight any germ that attacks the human body.

B-cells produce particular proteins, called antibodies, that try to neutralize the invading germ. After a person recovers from an infection, these antibodies continue to circulate in the bloodstream, acting as part of the immune system's "memory." Immune system memory explains why a person rarely suffers a second attack from an infectious disease such as measles. If the same germ is encountered again, the antibodies will recognize and neutralize it. T-cells attack the germ directly and try to kill it.

Special white blood cells, called T-helper cells, activate B-cells and T-cells to fight infection. When a virus such as the one that causes AIDS comes into contact with the body, T-helper cells should activate B-cells and T-cells. These should then start communicating with each other to develop the proper strategy to fight the germ. But in AIDS, this does not happen. The virus that causes AIDS penetrates T-helper cells and, over time, multiplies. This eventually kills T-helper cells. Without T-helper cells, activation of B-cells and T-cells does not occur. Without activation of B-cells and T-cells, the body's

immune system cannot function properly. The result is that people with AIDS not only cannot fight the virus that causes AIDS, but are also vulnerable to even the most seemingly harmless germ.

3. WHAT CAUSES AIDS?

The human immunodeficiency virus (HIV) causes AIDS. The factors that help determine vulnerability to infection and the progression to disease include poor social conditions, malnutrition, drug abuse, infection with hepatitis B virus, and sexually transmitted diseases such as syphilis. Hepatitis B is transmitted by blood contact, as in drug abuse that involves needles. Syphilis and other sexually transmitted diseases affect people who have many sexual partners.

4. HOW IS AIDS TRANSMITTED?

The AIDS virus can be transmitted from one person to another through:

- unprotected sexual intercourse with infected persons
- contaminated needles
- transfusion of infected blood or blood products
- prenatal infection
- organ transplant from an infected donor

Unprotected sexual intercourse with infected people poses the single most important risk of infection. The AIDS virus can be passed from one partner into the bloodstream of the other through tiny cuts or scratches.

Intravenous drug abusers may pick up the AIDS virus if they share needles with infected people. Hemophiliacs requiring frequent transfusions or blood products (factor VIII) are at risk due to the possibility of receiving contaminated blood. Since November 1985, Canada's Red Cross has been screening all blood donations for AIDS virus antibodies. Blood that tests positive is discarded. To kill the AIDS virus, they have also been heat-treating factor VIII, a blood product that promotes blood clotting.

The AIDS virus can be transmitted from an infected mother to her unborn child. Preliminary studies indicate infection takes place across the placenta. So a Cesarean section delivery does not prevent the transmission of the AIDS virus from an infected mother to her infant.

Some reports indicate that the AIDS virus can be transmitted through heart, pancreas, kidney, liver and bone transplants, and by artificial insemination. No recipients have developed AIDS but all organs are now screened for the AIDS virus antibodies.

The transmission of the AIDS virus occurs only when the virus enters the bloodstream. So casual contact with an AIDS victim does not pose a risk. Several studies indicate that sharing telephones, swimming pools, toilets or other household items and facilities with people infected with the AIDS virus poses

no risk. The virus is not transmitted during the preparation or serving of food and beverages. The virus is also not known to travel through air or to be transmitted by mosquitoes or other insects.

Some studies show that AIDS virus transmission did not occur after bites from patients infected with the AIDS virus. This suggests that transmission of the AIDS virus through contact with saliva is unlikely.

5. HOW COMMON IS AIDS IN CANADA?

As of August 21, 1989, the total number of AIDS cases reported in Canada was 2889. Of these, 2845 were adults, 44 were young children.

The Federal Centre for AIDS' Surveillance Update: AIDS in Canada projects the number of new cases of AIDS by using two mathematical models. One model predicts 980 new cases in 1993. Using this model, a total of 7648 AIDS cases will have occurred in Canada by the end of 1993. The other model predicts 2823 new cases in 1993, for a total of 12,890 AIDS cases by the end of 1993. The Federal Centre for AIDS believes that the latter model better predicts the spread of AIDS in Canada.

6. HOW LONG DOES IT TAKE TO DEVELOP THE DISEASE?

The period between the first contact with the AIDS virus and the development of the disease is not absolutely defined. Signs and symptoms resulting from infection with the AIDS virus develop in stages. Some infected people may develop AIDS following a period with few or no symptoms at all. Many infected individuals may have no symptoms for several years. But others may develop symptoms within three years from the time of infection. These symptoms are fever, swollen lymph glands in the neck and armpits, sweating, aches, fatigue, unexplained weight loss and diarrhea. Doctors use the term "AIDS-related complex" to describe the presence of these symptoms in infected persons. Within eight years, about 50 percent of all infected people develop specific conditions categorized as AIDS. These conditions include a lung disease called "pneumocystis carinii pneumonia," skin tumours called "Kaposi's sarcoma," fungal and viral infections such as candidiasis and herpes zoster, and severe diarrhea.

Some AIDS patients also suffer from dementia resulting in problems with memory and thinking. AIDS patients are prone to various infections of the brain, just as they suffer from an unusually high number of cancers, bacterial and viral infections of other parts of the body.

7. HOW IS AIDS RECOGNIZED?

Doctors use laboratory tests to confirm AIDS virus infection. The Elisa and Western Blot analyses identify people who have been exposed to the AIDS virus. These tests determine the presence in the bloodstream of particular antibodies

that result from contact with the virus. They do not identify who among a group of infected individuals will develop the disease. Doctors diagnose AIDS by the presence of specific illnesses such as pneumocystis carinii pneumonia or Kaposi's sarcoma. These diseases overcome the weakened immune system and are responsible for the high death rate among AIDS patients.

8. CAN AIDS BE TREATED?

As yet, there is no cure for AIDS. Several centres are administering drugs such as AZT (azidothymidine) or zidovudine, which have been shown to prolong life in AIDS patients. But so far, no AIDS victims have recovered. Doctors can only try to control the severe diseases which so easily attack people with AIDS. For example, pneumocystis carinii pneumonia may be prevented with early medication.

9. SHOULD AIDS BE AN OCCUPATIONAL CONCERN?

Statistical data suggest that AIDS is not an occupational disease. None of the AIDS cases reported in Canada is occupationally related. In the United States only a few cases of AIDS virus infection are occupationally related.

The Centers for Disease Control recommend using "universal precautions" to prevent the spread of AIDS in the workplace. This approach stresses that workers assume that all people are potentially infectious for the AIDS virus. "Universal precautions" involves using protective clothing such as gloves, gowns or aprons, masks and protective eye wear when dealing with people's blood and other blood-contaminated body fluids such as semen and vaginal secretions. "Universal precautions" do not apply to feces, nasal secretions, sputum, sweat, tears, urine and vomit, unless they contain visible blood. They also do not apply to saliva except in dentistry where saliva is likely to be contaminated with blood.

Hand washing after contact with blood, blood-contaminated body fluids and soiled items is also recommended to reduce the risk of infection.

The best approach to most diseases is to prevent their occurrence. Occupationally related diseases are no exception. In the case of AIDS, prevention is the only cure.

Occupational Groups Risking Exposure to the AIDS Virus

The occupational groups listed below risk exposure to the AIDS virus in the workplace. The table that follows suggests preventive measures for these groups. For many situations, using all protective barriers listed in the table is not necessary. But workplaces should always make them available for emergency responses.

Surgeons, Nurses and Nurses Aides

Only a few cases of virus transmission to health care workers have been reported. Surgeons, nurses and nurses aides, however, should take precautions to avoid needlestick injuries, cuts with sharp instruments and exposure through skin lesions to potentially infectious blood and body fluids.

Physicians and Laboratory Workers

These people continuously handle infectious samples. Doctors, in diagnosing AIDS patients, carry out physical examinations and collect blood samples. Laboratory technicians analyze potentially infected samples. Although in Canada none of these professionals has been reported to have developed AIDS, they should always implement safe laboratory practices.

Ambulance Workers

Ambulance workers are potentially at risk because they attend accidents and fatalities. Ambulance workers perform first aid on individuals for whom no medical information is available. Blood contact is a possibility for workers when removing injured people from the scene of an accident.

Dental Workers

Dental workers are exposed daily to the blood and saliva of patients. Precautionary measures should be adopted because of possible exposure to the AIDS virus, and because the mouth can be the vehicle for the transmission of many infectious diseases.

Embalmers

Embalming the bodies of persons with AIDS presents a risk because the AIDS virus can live for hours in a deceased body.

Police and Firefighters

These workers attend accident scenes where they might be exposed to the AIDS virus through blood contact with skin cuts or scratches.

Mental Health Institution Workers and Corrective Services Workers

These workers risk exposure to the AIDS virus when cleaning blood spills or when giving first aid where there is a possibility of blood contact.

A particular concern that corrective service workers share with police is dealing with violent people. Workers bitten by prisoners or suspects require prompt medical attention. Bites frequently result in infection with organisms other than the AIDS virus.

Cleaners

Cleaning staff risk exposure when cleaning up spills of blood or other body fluids. Cleaning staff need to know how to use protective clothing and proper cleaning techniques. All cleaning equipment used to clean spills of body fluids should be kept in a restricted area and should not be used in any other area of the hospital.

Laundry Workers

Launderers in health care facilities are exposed to potentially contaminated linen. All laundry should be bagged and labelled as possibly infectious if there was contact with any person with an infectious disease.

Incinerator Attendants

Incinerator attendants in health care facilities risk exposure to the AIDS virus while disposing of infectious waste.

Mortuary Attendants

These workers are at risk especially if an autopsy is necessary when an AIDS patient dies.

Table - Preventive measures for reducing occupational exposure to the AIDS virus

Occupation	Preventive Measures
Surgeons, nurses and nurses aides	Wash hands. Use gloves. Wear goggles, gowns and masks if splashing of body fluids is expected. Use disposable needles, syringes and devices for mouth-to-mouth resuscitation. Bag and label contaminated linen.
Physicians and laboratory workers	Wash hands. Use coats and gloves. Wear goggles, gowns and masks if splashing of body fluids is expected. Use disposable needles and syringes, mechanical pipetting devices and biological safety cabinets. Disinfect work surfaces and equipment with sodium hypochlorite solution.
Ambulance workers	Wash hands. Use gloves. Use disposable needles, syringes and devices for mouth-to-mouth resuscitation.

Table - Preventive measures for reducing occupational exposure to the AIDS virus, continued

Occupation	Preventive Measures
Dental workers	Wash hands. Use gloves. Use disposable needles and syringes. Use goggles, gowns and masks if splashing of blood is expected.
Embalmers	Wash hands. Use gloves, gowns, boot-covers, goggles and masks. Use disposable surgical instruments. Sterilize reusable equipment. Disinfect work surfaces with sodium hypochlorite solution.
Police and firefighters	Wash hands. Use gloves. Use disposable devices for mouth-to-mouth resuscitation.
Mental health institution workers and corrective services workers	Wash hands. Use gloves. Keep cleaning equipment in restricted areas. Use disposable devices for mouth-to-mouth resuscitation.
Cleaners	Wash hands. Use gloves. Keep cleaning equipment in restricted areas.
Laundry workers	Wash hands. Use gloves.
Incinerator attendants	Wash hands. Use gloves.
Mortuary attendants	Wash hands. Use gloves. Wear goggles, masks and boot-covers if splashing of blood and body fluids is expected. Bag, label and incinerate wastes.

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